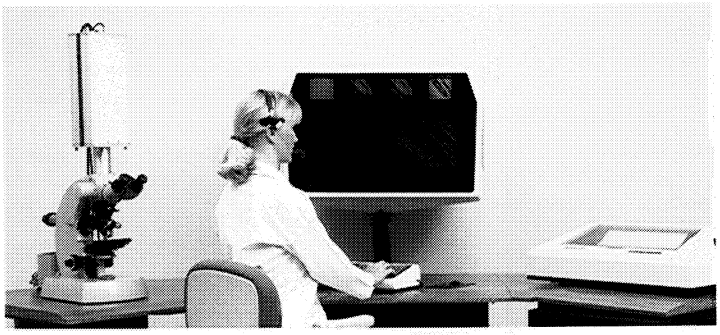

Image analysis is the art of obtaining information from pictures, for example, through visual examination of a photograph or x-ray. But visual extraction and interpretation of information is slow, tedious and error prone because it is subjective. To support space requirements, NASA—in particular Jet Propulsion Laboratory (JPL)—developed the technique of digital imaging, computer-processed numerical representation of physical images, such as the planets and moons of the solar system. JPL also played a lead role in developing digital image processing, or enhancement of images to improve their quality and make them easier to interpret. Quantitative digital image analysis goes a step further and includes location of objects within an image and measurement of each object to extract quantitative information.

In the decade of the 1980s, these technologies are finding scores of non-aerospace applications. In medicine, for example, CAT scanners and diagnostic radiography systems are based on digital imaging; three-dimensional reconstruction techniques are proving a valuable aid to microscopy; and computerized image analysis of cardiological x-rays is providing quantitative data on heart valve and artery functions. In industry, digital imaging is notably employed in quality control inspection systems; it also has applications in chemistry, cartography, manufacture of printed circuitry, metallurgy, ultrasonics and seismography, in addition to many aerospace uses.

Shown in the accompanying photo is the PSICOM 327, a stand-alone work station designed to perform all of the commonly used functions in quantitative digital image analysis. The photo shows a medical application—quantitative measurements of a microscope specimen—but PSICOM 327 is a general purpose system with broad industrial and scientific uses in addition to its clinical applications.

Introduced to the commercial market in 1985, the PSICOM 327 is manufactured by Perceptive Systems, Inc. (PSI), Houston, Texas. PSI is a NASA technology transfer company employing a number of personnel with NASA-acquired technical expertise, operating under a NASA patent license, and incorporating in its products digital imaging technology developed by JPL. The company was founded in 1984 by Dr. Kenneth Castleman, now vice president—research and development, and Don Winkler, vice president—engineering. Both are former NASA digital imaging experts, Castleman with JPL and Winkler with Johnson Space Center.

The PSICOM 327, now in use at several universities and industrial facilities, is PSI's first product. The company recently introduced a new PSICOM 427 high resolution imaging system to meet market demand for greater accuracy and image resolution in some applications, and it also developed the first model of a 200 Series that will feature lower cost, smaller, more mobile systems designed for specific rather than general purpose applications. ▲